



TRANSMITTAL

In Reply Application of:  
Stephen FACTOR et al.

Serial Number: 10/623,686

Filed: July 21, 2003

For: Simultaneous Reduction in NOx and  
Carboxin Ash from Using Manganese  
in Coal Burners

Confirmation No.: 5322

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class U.S. Mail on April 27, 2004 with sufficient postage in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Beth Earnest

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Transmitted herewith are the following in the subject application:

Information Disclosure Statement (no fee)  
Forms PTO/SB/08A&B listing 80 references and attaching 25 references  
Return Postcard (attached hereto, but not stapled)

It is believed that there are no fees associated with this filing. However, in the event the calculations are incorrect, the Commissioner is hereby authorized to charge any deficiencies in fees or credit any overpayment associated with this communication to Deposit Account No. 05-1372. A duplicate copy of this sheet is attached.

Respectfully submitted,

ETHYL PETROLEUM ADDITIVES, INC.

Leah O. Robinson, Reg. No.: 44,990

330 South Fourth Street  
Richmond, VA 23219  
Phone: 804-788-5498  
FAX: 804-788-5519

Date: April 27, 2004

**In re Patent Application of:  
Stephen Factor et al.**

**Confirmation No.: 5322**

## For: Simultaneous Reduction in NOx and Carbon in Ash from Using Manganese in Coal Burners

## INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

It is respectfully requested that these references be fully considered in their entirety, and that the references be made of record in the above-captioned application. It is also respectfully requested that the Examiner initial in the appropriate area on the enclosed Form PTO/SB/08A, thereby indicating the Examiner's consideration of each of the references.

Fees

As this Information Disclosure Statement is submitted before the date of a first Office Action on the merits, it is believed that no fees are due. However, in the event the calculations are incorrect, the Commissioner is hereby authorized to charge any deficiencies in fees or credit any overpayment associated with this communication Deposit Account No. 05-1372.

Conclusion

It is believed that all provisions of 37 CFR 1.97 have been complied with, and consideration of these references is most respectfully requested.

Respectfully Submitted,

**ETHYL PETROLEUM ADDITIVES, INC.**

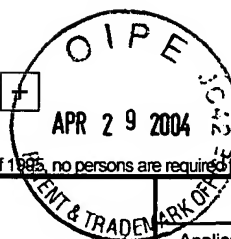
A handwritten signature in black ink, appearing to read "Leah O. Robinson". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Leah O. Robinson, Reg. No. 44,990

Richmond, VA 23219  
Phone: 804-788-5498  
FAX: 804-788-5519

Date: April 27, 2004

Please type a plus sign (+) inside this box → ☐



PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031  
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known

Sheet 1 of 5

Application Number	10/623,686
Filing Date	July 21, 2003
First Named Inventor	Steve A. Factor, et al.
Group Art Unit	1714
Examiner Name	Not Assigned
Attorney Docket Number	EI-7597

### U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
		US 6,361,754 B1		Peter-Hoblyn et al.	3/26/2002	
		US 6,200,358 B1		Fleischer et al.	3/13/2001	
		US 6,193,767 B1		Arters et al.	2/27/2001	
		6,152,972		Shustorovich et al.	11/28/2000	
		6,056,792		Barr et al.	5/2/2000	
		6,051,040		Peter-Hoblyn	4/18/2000	
		6,023,928		Peter-Hoblyn et al.	2/15/2000	
		6,003,303		Peter-Hoblyn et al.	12/21/1999	
		5,976,475		Peter-Hoblyn et al.	11/2/1999	
		5,953,906		Gamel et al.	9/21/1999	
		5,944,858		Wallace	8/31/1999	
		5,928,392		Aradi	7/27/1999	
		5,924,280		Tarabulski	7/20/1999	
		5,919,276		Jeffrey	7/6/1999	
		5,912,190		Barr et al.	6/15/1999	
		5,819,529		Peter-Hoblyn	10/13/1998	
		5,813,224		Rao et al.	9/29/1998	
		5,809,775		Tarabulski et al.	9/22/1998	
		5,809,774		Peter-Hoblyn et al.	9/22/1998	
		5,758,496		Rao et al.	6/2/1998	

### FOREIGN PATENT DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sub>6</sub>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
		EP	0 466 512	B1	Leeper	6/29/94		
		EP	0 507 510	A1	Hollrah, Don Paul et al	10/07/92		
		EP	0 667 387	A2	Perry, Newton A. et al	8/16/1995		
		EP	0668 899	B1	Peter-Hoblyn et al	09/20/00		

Examiner  
Signature

Date  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Please type a plus sign (+) inside this box → +

PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 2 of 5

## **Complete if Known**

Application Number	10/623,686
Filing Date	July 21, 2003
First Named Inventor	Steve A. Factor, et al.
Group Art Unit	1714
Examiner Name	Not Assigned
Attorney Docket Number	EI-7597

## **U.S. PATENT DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
		5,732,548		Peter-Hoblyn	3/31/1998	
		5,679,116		Cunningham et al.	10/21/1997	
		5,599,357		Leeper	2/4/1997	
		5,584,894		Peter-Hoblyn et al.	12/17/1996	
		5,551,957		Cunningham et al.	9/3/1996	
		5,501,714		Valentine et al.	3/26/1996	
		5,376,154		Daly et al.	12/27/1994	
		5,340,369		Koch et al.	8/23/1994	
		5,113,803		Hollran et al.	5/19/1992	
		5,034,020		Epperly et al.	7/23/1991	
		4,955,331		Hohr et al.	9/11/1990	
		4,946,609		Pruess et al.	8/7/1990	
		4,908,045		Farrar	3/13/1990	
		4,891,050		Bowers et al.	1/2/1990	
		4,804,388		Kukin	2/14/1989	
		4,674,447		Davis	6/23/1987	
		4,670,020		Rao	6/2/1987	
		4,664,677		Dorer, Jr. et al.	5/12/1987	
		4,588,416		Zaweski et al.	5/13/1986	
		4,568,357		Simon	2/4/1986	

## **FOREIGN PATENT DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sub>6</sub>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
		EP	1 368 444	A1	Openshaw et al.	12-10-2003		
		WO	02/48293	A1	Roos et al.	06-20-2002		

Examiner Signature

Date Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

+

+

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

*(use as many sheets as necessary)*

3

•

5

Attorney Docket Number

**Complete if Known**

10/623,686

**July 21, 2003**

Steve A. Factor, et al.

1714

**Not Assigned**

EI-7597

## U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
		4,474,580		MacKenzie et al.	10/2/1984	
		4,390,345		Somorjai	6/28/1983	
		4,317,657		Niebylski	3/2/1982	
		4,266,946		Niebylski	5/12/1981	
		4,175,927		Niebylski	11/27/1979	
		4,139,349		Payne	2/13/1979	
		4,104,036		Chao et al.	8/1/1978	
		4,036,605		Hartle	7/19/1977	
		2,818,417		Brown et al.	12/31/1957	
		2,151,432		Lyons et al.	3/21/1939	
		2,086,775		Lyons et al.	7/13/1937	
		20020112466		Roos et al.	8/22/2002	
		20030177758		Roos et al.	11/25/2003	
		6,206,685		Zamansky, et al.	3/27/2001	
		6,039,772		Orr	3/21/2001	

## FOREIGN PATENT DOCUMENTS

[illegible]

**Examiner  
Signature**

Date Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

**Burden Hour Statement:** This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to send to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231 **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC**

20231.complete this form should be

Please type a plus sign (+) inside this box →



PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031  
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO		<b>Complete if Known</b>	
		Application Number	10/623,686
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>		Filing Date	July 21, 2003
		First Named Inventor	Steve A. Factor, et al.
		Group Art Unit	1714
		Examiner Name	Not Assigned
		Attorney Docket Number	EI-7597
Sheet	4	of	5

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		Faix, Louis J.; A study if the Effects of Manganese Fuel Additive on Automotive Emissions; SAE [Tech. Pap.], 780002, pp. 1-12	
		Fekete, Nicholas; Gruen, Igor; Voigtlander, Dirk; Nester, Ulrich; Krutzsch, Bernd; Willand, Jurgen; and Kuhn, Michael; Advanced Engine Control and Exhaust Gas Aftertreatment of a Leanburn SI Engine; SAE [Tech. Pap] 972873; pp. 1-10	
		Valentine, James M.; Clean Diesel Technologies Inc. Announces Test Results of Platinum/Cerium Diesel Fuel Additive; 203/327-7050, article in Diesel/Net News; 9/20/2002, pp. 1-2.	
		Eastwood, Peter; Critical Topics in Exhaust Gas Aftertreatment; Research Studies Press Ltd. (2000), pp. 215-218	
		Lenane, D. L.; Effect of MMT on Emissions from Production Cars; SAE [Tech. Pap.], 780003, pp. 1-20	
		Lenane, D. L.; Effect of a Fuel Additive on Emission Control Systems; sae [Tech. Pap.] 902097, pp. 1-17	
		Farrauto, Robert J.; Mooney, John J.; Effects of Sulfur on Performance of Catalytic Aftertreatment Devices; SAE [Tech. Pap.] 920557, pp. 1-7	
		Jelles, S.J.; Makkee, M.; Moulijn, J.A.; Acres, G.J.K.; and Peter-Hoblyn, J.D., Diesel Particulate Control. Application of an Activated Particulate Trap in Combination with Fuel Additives at an Ultra Low Dose Rate; SAE [Tech. Pap.], 1999-01-0113, pp. 1-6	
		Eolys™ Fuel-Borne Catalyst for Diesel Particulates Abatement: A Key Component of an Integrated System, DieselNet Technical Report, Sept. 1999, pp.1-9.	
		Guyon, M.; Blejeau, F.; Bert, C.; LeFaou, PH.; Impact of Sulfur on Nox Trap Catalyst Activity-Study of the Regeneration Conditions; SAE [Tech. Pap.] 982607, pp. 87-95	

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Please type a plus sign (+) inside this box → +

PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031  
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>		<b>Complete if Known</b>	
		Application Number	10/623,686
		Filing Date	July 21, 2003
		First Named Inventor	Steve A. Factor, et al.
		Group Art Unit	1714
		Examiner Name	Not Assigned
Sheet	5	of	5
		Attorney Docket Number	EI-7597

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		Arakawa, Kenji; Matsuda, Satoshi; and Kinoshita, Hiroo; Progress in Sulfur Poisoning Resistance of Lean NOx Catalysts; SAE [Tech. Pap.] 980930, pp. 111-118	
		Dearth, Mark A.; Hepburn, Jeffrey S.; Thanasiu, Eva; McKenzie, JoAnne; Home, Scott G.; Sulfur Interaction with Lean Nox Traps: Laboratory and Engine Dynamometer Studies; SAE [Tech. Pap.] 982595, 1998, pp. 1-9	
		Aradi, Allen A.; Roos, Joseph W.; Fort, Jr., Ben F.; Lee, Thomas E.; and Davidson, Robert I.; The Physical and Chemical Effect of Manganese Oxides on Automobile Catalytic Converters; SAE [Tech. Pap.] 940747, pp. 207-218	
		Bailie, J. D.; Michalski, G. W.; Unzelman, G. H., MMT-A Versatile Antiknock; Natl. Pet. Refiners Assoc., [Tech. Pap.], AM-78-36, pp. 1-20	
		Valentine, James M.; Peter-Hoblyn, Jeremy D.; and Acres, G.K., Emissions Reduction and Improved Fuel Economy Performance from a Bimetallic Platinum/Cerium Diesel Fuel Additive at Ultra-Low Dose Rates; SAE [Tech. Pap.], 2000-01-1934, pp. 1-9	
		Guinther, Greg H.; Human, David M.; Miller, Keith T.; Roos, Joseph W.; and Schwab, Scott D.; The Role that Methylcyclopentadienyl Manganese Tricarbonyl (MMT®) Can Play in Improving Low-Temperature Performance of Diesel Particulate Traps; SAE [Tech. Pap.], 2002-01-2728, pp. 1-9	
		Nelson, A.J.; Ferreira, J.L.; Reynolds, J.G.; Schwab, S.D.; and Roos, J.W.; X-Ray Absorption Characterization of Diesel Exhaust Particulates; Article in Materials Research Society Symposium Proceedings, Vol. 590, 2000, pp. 63-69	
		Stultz, S.C., Kitto, J.B., Editors; "NOx Formation conditions"; Babcock & Wilcox, a McDermott Company; Steam, its generation and use. 40th ed., p. 34-4 to 34-9. 1992.	
		MILLER, R. et al., "A Super-Extended Zel'dovich Mechanism for NOx modeling and Engine Calibration," SAE Technical Paper 980781, 1998.	

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number. <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.